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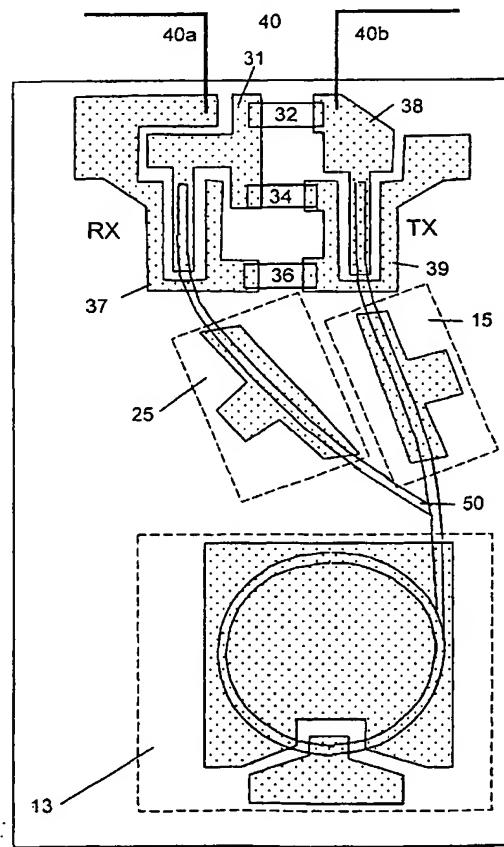
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(54) Title: MILLIMETER WAVE TRANSMITTER USING OPTICAL HETERODYNING



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(57) Abstract: The present invention relates to an integrated device for transmitting and/or receiving information by means of millimetric waves (wavelength 1 mm-10 mm), i.e. electromagnetic waves corresponding to frequencies of 30 to 300 GHz. In particular, the present invention relates to a device constituted by an optoelectronic integrated circuit that interfaces with an antenna able to transmit and/or receive millimetre wave signals. In turn the device, associated to the appropriate biasing and control electronics, constitutes a transceiver module to be used in a wireless or mobile radio local area network. The transmitter circuit is constituted by a laser in passive mode-locking. The optical signal thus generated is amplified, modulated and converted into radio frequency signal through a guide photodiode, to be lastly transmitted through an antenna. The receiver circuit is constituted by an antenna, a photodiode and a laser identical to that of the transmitter. The photodiode, by means of appropriate bias, performs a dual function of optical and electrical mixer. In particular, the first function converts to electrical frequency the optical beat signal between two modes generated by the laser, the second function takes place by means of the non linear voltage/current characteristic of the photodiode and allows to bring back to base band the received signal, thereby allowing to extract the modulating signal from the weak signal received through the antenna.

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